What is claimed is:

1. A plant transfer and transplanting system comprising:

(a) a movable or stationary plant supply-tray/support table for receiving a supply tray or trays and wherein the plant supply-tray/support table includes one opening or multi-opening plates formed therein for permitting a plant or plants from the supply tray or trays to pass from the supply-tray-cell or cells through the opening or openings of the supply-tray/support table;

(b) X or Y direction indexing frames movably mounted over the supply-tray/support table for receiving, holding and indexing supply tray or trays to transfer plants;

(c) a movable or stationary support table for supporting and conveying pots, multi-pot receiving flat or flats;

(d) a supporting frame (with or without caster wheels) for movably support in a upper supply-tray/support table and lower multi-pot receiving-flat/support table and their accessories;

(e) a stationary or movable set of dibbler plates for dibbling growing media and matching pusher plates or impulse vacuum system plates (also exchangeable and dismountable) for dislodging plants from supply tray or trays for transplanting plants into the planting area;

(f) an activation system for moving the multi-pot receiving flat/support table or dibbler plates to dibble growing media in the planting area; and

(g) an activation system for moving the supply-tray/support table or pusher plates or for activating impulse vacuum systems to perform dislodging and transplanting operations.

2. The plant transfer and transplanting system of **claim 1** wherein the plant dislodging means includes a set of pusher rods attached on a plate in a matrix formation for a particular supply tray or trays to dislodge a plurality of plants/seedlings/plugs from the supply tray or trays in a matrix formation as the supply-tray/support table is moved upward or pusher plate is moved downward.

3. The plant transfer and transplanting system of **claim 1** wherein the growing media dibbling means includes a set of dibblers attached on a plate in a matrix formation for a particular multi-pot receiving flat or flats to dibble the underlying multi-pot receiving flat or flats in a matrix formation as the multi-pot receiving flat/support table is moved upward or dibbler plate is moved downward.

4. The plant transfer and transplanting system of **claim 1** wherein the indexing frames can be indexed in X or Y direction to move the supply tray or trays about the supply-tray/support table using electrical, hydraulic, pneumatic, mechanical, manual, or combination systems.

5. The plant transfer and transplanting system of **claim 1** wherein the support table for multi-pot receiving flat or flats includes manually, semi-automatically or automatically activated indexing/conveying means to transfer the respective plant receiving means to an appropriate planting position under the suction tubes or pushers where the transfer of plants actually takes place and under the dibblers where the dibbling of growing media takes place, operatively in time relationship to the supply tray indexing frame.

6. The plant transfer and transplanting system of **claim 1** wherein the a supporting frame includes vertical and horizontal frames (with/without casters) for movably support upper and lower support tables so that they can move up and down in time relationship with dibbling, plant transferring and transplanting operations.

7. The plant transfer and transplanting system of **claim 1** wherein the plant dislodging means includes one or more impulse vacuum systems for generating impulse vacuum inducing the suction forces to dislodge one or a plurality of plants/seedlings/plugs from a supply tray or trays, through the opening or openings of the supply-tray/support table, and through the conveying tube or tubes into an underlying planting area or receptacle such as flats, pots, containers, or the field.

8. The plant transfer and transplanting system of **claim 7** wherein the impulse vacuum system includes a bellow with the suction tube extending from the opening of the supply-tray/support table and the lower end is attached to the telescoping tube inside the bellow with a flexible door at its end; and an actuator for creating relative movement to expend the bellow to generate impulse vacuum at the suction tube which in turn induces a plant from the supply-tray downwardly through the opening of the supply-tray/support table and conveying through tube into an underlying planting area.

9. The plant transfer and transplanting system of **claim 7** wherein the bellow includes pyramid shaped bellow so as to create a relatively larger initial impulse vacuum as the bellow is extended during the process of creating an impulse and an intermittent vacuum.

10. The plant transfer and transplanting system of **claim 7** wherein the outlet tube at the lower end of bellow includes a flexible door arrangement that will close tight in response to a vacuum created in the bellow thereby causing a plant to be ejected downward and to shoot through the flexible door arrangement to effectuate plant transfer and transplanting.

11. A method of matrix plant transfer and transplanting system comprising:

(a) selecting a matrix pattern of an underlying multi-pot receiving flat or flats and matching opening plates, dibbler plates and pusher plates or impulse vacuum system plate for supply tray or trays;

(b) activating the multi-pot receiving flat/support table or dibbler plates to dibble growing media in the planting area;

(c) activating the supply-tray/support table or pusher plates or activating impulse vacuum systems to perform dislodging and transplanting operations to push down selected plants simultaneously according to the matrix pattern to perform the first set of transplanting operation;

(d) sequentially shifting the entire supply tray or trays to the next position such that another set of plants in the matrix formation can be transferred and at the same time the second multi-pot receiving flat is moved or conveyed to new position on the support table; and thereafter

(e) the matrix plant transfer and transplanting processes are continued until the entire supply tray or trays are emptied and the plants are transplanted into an underlying planting area or receptacle, such as flats, pots, containers, or the field.

12. The method of **claim 11** including the step of exchanging with a different set of receiving flats and matching opening plates, dibbler plates and pusher plates within the same one or the same group of plant supply trays.

13. The method of **claim 11** including the step of exchanging with a different set of receiving flats and matching opening plates, dibbler plates and pusher plates within the different one or the different group of plant supply trays.

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